

NON-PUBLIC?: N
ACCESSION #: 8810250245
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Beaver Valley Power Station, Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000412

TITLE: Overpower Delta-T Reactor Trip Due to Faulty Lead/Lag Circuit Card
EVENT DATE: 09/20/88 LER #: 88-013-00 REPORT DATE: 10/20/88

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Mr. Thomas P. Noonan, Plant Manager TELEPHONE: (412) 643-1258

COMPONENT FAILURE DESCRIPTION:

CAUSE: X SYSTEM: JE COMPONENT: XXXX MANUFACTURER: W351
REPORTABLE TO NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO EXPECTED SUBMISSION DATE:

ABSTRACT:

On 9/20/88 at 0140 hours, with the Unit at 100% reactor power, a maintenance surveillance procedure (MSP) was completed on Loop 2A Overpower Delta-T (OPDT) channel. At 0200 hours, another surveillance procedure was initiated to verify operability of the Neutron Flux Power Range Channels. This procedure requires the bistables for the OPDT Reactor Trip and Rod Stop blocks to be placed in the tripped condition. Two of four power range channels were completed by 0254 hours. The bistables for the third channel, associated with the 2c reactor coolant loop, were tripped at 0301 hours. At 0306 hours, an electronic spike was received on Loop 2A OPDT, completing the required logic and generating an OPDT Reactor Trip signal. The operators stabilized the plant using the Emergency Operating Procedures. Instrument and Control personnel were called in to troubleshoot/correct the problem. The cause of the trip was determined to be a faulty electronic circuit card. This card was replaced. Administrative guidelines have been provided to Operations personnel, to enhance the post-test/maintenance practice. There were no safety implications to the public as a result of this incident. This type of protective system actuation has been previously analyzed in Section 15.6 of the Updated Final Safety Analysis Report.

END OF ABSTRACT

TEXT PAGE 2 OF 3

DESCRIPTION

On 9/20/88 at 0140 hours, with the Unit at 100% reactor power, a Maintenance Surveillance Procedure (MSP) was completed on Loop 2A Overpower Delta-T (OPDT) channel. This MSP, 2MSP 6.38-I "Reactor Coolant Temperature Loop 2RCS-T412 DELTA T-Tavg Protection Channel I Calibration", performs an eighteen (18) month calibration of the channel. During the performance of this MSP, Instrument and Control (I&C) personnel identified a faulty lo-limit circuit on the Lead/Lag circuit card (NLL) for that loop. This card was replaced. Following completion of the MSP, Operations personnel commenced performance of operating Surveillance Test (OST) 2.2.1, "Nuclear Power Range Channel Functional Test". This OST verifies operability of the four power range neutron flux channels and their associated trip and permissives functions. Power Range Channel N-41 was completed at 0226 hours, and Power Range Channel N-42 was completed at 0254 hours. The operator then placed the bistables for the Overpower and Overtemperature Delta-T Reactor Trips and for the Rod Stop Blocks, for Loop 2C, in the tripped condition in accordance with the OST, at 0301 hours. At 0306 hours, a 1.034 second, electronic OPDT signal spike occurred on Loop 2A. This completed the two-of-three (2/3) Overpower Delta-T Reactor Trip coincidence, initiating a reactor trip. The operators stabilized the plant in Hot Standby (Operating Mode 3) using the Emergency Operating Procedures: E-0 "Reactor Trip or Safety Injection" and ES-0.1 "Reactor Trip Response".

This event was reported to the Nuclear Regulatory Commission, in accordance with 10 CFR 50.72.a.2.ii, at 0340 hours. This written report is being submitted in accordance with 10 CFR 50.73.a.2.iv.

ROOT CAUSE DETERMINATION

Instrument and Control (I&C) personnel initially suspected the new Lead/Lag (NLL) Card (Westinghouse Part No. 2837A18G01) which was installed on 9/20/88 after the original card was found to have a faulty lo-limit circuit. The original card containing the faulty lo-limit circuit was repaired and was reinstalled after the new, spare NLL card developed spikes. I&C personnel then set up a recorder to monitor this card. Troubleshooting efforts with the recorder indicated that the signal spikes were originating in the "All Section (Input Gain Adjustment) of the card. This card was replaced with a another new NLL card on 9/25/88. A recorder was again installed to monitor this channel, however, no additional problems were discovered. The failed card was tested using a heat gun while it was mounted on a test stand. The card failed under the application of heat. The component that failed was in the operational

amplifier (op-amp) in the Input Gain Adjustment section of the NLL card.

TEXT PAGE 3 OF 3

CORRECTIVE ACTIONS

The corrective actions taken as a result of this event are listed below.

Short-term Corrective Actions

1. The operators utilized the Emergency Operating Procedures to stabilize the plant in Hot Standby (Operational Mode 3).
2. The failed Lead/Lag (NLL) Card was replaced on 9/25/88.

Long-term Corrective Actions

Administrative guidelines designed to prevent recurrence of this type of event were issued to Operations Personnel on 10/3/88. If, due to a recurring condition or some similar indication, the station identifies a concern with a particular component, then these guidelines recommend post-maintenance reliability verification runs. Following maintenance on an identified component, the component's redundant train should not be removed from service for maintenance for the duration of this verification period.

SAFETY IMPLICATIONS

There were no safety implications to the public as result of this incident. The Over power Delta-T reactor trip is designed to protect against excessive power (fuel rod rating protection) and utilizes a two-out-of-three coincidence. This trip functioned as designed upon receipt of the Loop 2A OPDT signal with the Loop 2C OPDT bistable in a tripped condition. There were no actual excessive power conditions present in the reactor at the time of the trip signal.

ATTACHMENT 1 TO 8810250245 PAGE 1 OF 2

Duquesne Light
Nuclear Group
P.O. Box 4
Shippingport, PA 15077-0004

Telephone (412) 393-6000

October 20, 1988
ND3SPM:0326

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 88-013-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 2-88-13, 10 CFR 50.73.a.2.iv., "Overpower Delta-T Reactor Trip Due to Faulty Lead/Lag Circuit Card".

Very truly yours,

T. P. Noonan
Plant Manager

cj

Attachment

ATTACHMENT 1 TO 8810250245 PAGE 2 OF 2

October 14, 1988
ND3SPM:0326
Page two

cc: Mr. William T. Russell
Regional Administrator
United States Nuclear Regulatory Commission
Region 1
King of Prussia, PA 19406

C. A. Roteck, Ohio Edison

Mr. Peter Tam, BVPS Licensing Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

J. Beall, Nuclear Regulatory Commission,

BVPS Senior Resident Inspector

Mr. Alex Timme, CAPCO Nuclear Projects Coordinator
Toledo Edison

INPO Records Center
Suite 1500 1100 Circle 75 Parkway
Atlanta, GA 30339

G. E. Muckle, Factory Mutual Engineering, Pittsburgh

Mr. J. N. Steinmetz, Operating Plant Projects Manager
Mid Atlantic Area
Westinghouse Electric corporation
Energy Systems Service Division
Box 355
Pittsburgh, PA 15230

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange Suite 245
270 Farmington Avenue
Farmington, CT 06032

Mr. Richard Janati
Department of Environmental Resources
P. O. Box 2063
16th Floor, Fulton Building
Harrisburg, PA 17120

Director, Safety Evaluation & Control
Virginia Electric & Power Co.
P.O. Box 26666
One James River Plaza
Richmond, VA 23261

*** END OF DOCUMENT ***
